AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions of claims:

1. (cancelled)

2. (cancelled)

3. (cancelled)

4. (cancelled)

5. (cancelled)

6. (cancelled)

7. (previously presented) An electron source comprising:

a cold cathode, wherein the cold cathode is substantially flat;

an evacuated vacuum envelope enclosing the cold cathode;

circuitry for creating an electric field sufficient to cause an electron beam to be emitted from the cold cathode; and

a window in the evacuated vacuum envelope to permit passage of the electron beam externally from the envelope.

8. (previously presented) A method for operating an electron source, comprising the step of activating an electric field to cause an emission of an electron beam from a cold cathode within an evacuated envelope in a manner so that the electron beam passes externally from the envelope through a window in the envelope, wherein the cold cathode is substantially flat.

9. (original) The method as recited in claim 8, further comprising the step of positioning an object relative to the electron source so that the electron beam emitted externally from the electron source irradiates the object, wherein the object is external to the evacuated envelope.

10. (previously presented) The electron source of claim 7, wherein the cold cathode comprises a plurality of carbon nanotubes.

11. (previously presented) The electron source of claim 7, wherein the cold cathode comprises amorphic diamond emitters.

12. (previously presented) The electron source of claim 10, wherein the plurality of carbon nanotubes comprise single wall nanotubes.

13. (previously presented) The electron source of claim 10, wherein the cold cathode comprises a mixture of amorphous carbon, graphite diamond, and fullerene-type carbon materials.

14. (previously presented) The electron source of claim 7, wherein the evacuated vacuum envelope is formed within a vessel, wherein the vessel is formed by a first wall substantially parallel to a second wall, wherein the vessel is formed by a third wall substantially parallel to a fourth wall, wherein the first wall is substantially perpendicular to the third wall, wherein the second wall is substantially perpendicular to the fourth wall, wherein the vessel comprises a fifth wall coupled to the first, second, third, and fourth walls, wherein the cold cathode is coupled to the fifth wall, wherein the fifth wall is substantially parallel to the window.

15. (previously presented) The method as recited in claim 8, wherein the cold cathode comprises a plurality of carbon nanotubes.

16. (previously presented) The method as recited in claim 8, wherein the cold cathode comprises amorphic diamond emitters.

17. (previously presented) The method as recited in claim 15, wherein the plurality of carbon nanotubes comprise single-wall nanotubes.

18. (previously presented) The method as recited in claim 15, wherein the cold cathode comprises a mixture of amorphous carbon, graphite diamond, and fullerene-type carbon materials.

19. (previously presented) The method as recited in claim 8, wherein the evacuated vacuum envelope is formed within a vessel, wherein the vessel is formed by a first wall substantially parallel to a second wall, wherein the vessel is formed by a third wall substantially parallel to a fourth wall, wherein the first wall is substantially perpendicular to the third wall, wherein the second wall is substantially perpendicular to the fourth wall, wherein the vessel comprises a fifth wall coupled to the first, second, third, and fourth walls, wherein the cold cathode is coupled to the fifth wall, wherein the fifth wall is substantially parallel to the window.